

WHAT IS CLAIMED IS:

1 1. A method of continuously manufacturing tubular filter products, said method comprising:
2 rotating a mandrel in a first rotational direction;
3 depositing nonwoven fibers on the mandrel to form a tubular body; and
4 continuously withdrawing the tubular body from the mandrel by engaging a peripheral surface
5 of the tube with one or more detents extending radially from a surface of a roller, the roller
6 rotating in a direction substantially opposite said first rotational direction as said one or more
7 detents engage said tubular body to a predetermined depth relative to said mandrel.

1 2. The method of claim 1, wherein said peripheral surface comprises the outer surface of a fully
2 formed tubular body.

1 3. The method of claim 1 further comprising covering said peripheral surface with additional
2 nonwoven fibers.

1 4. The method of claim 1, wherein said roller includes multiple detents.

1 5. The method of claim 4, wherein said multiple detents extend radially to equal distances from
2 said surface of the roller.

1 6. The method of claim 5, wherein said multiple detents are uniformly distributed about said
2 roller.

1 7. A tubular filter product comprising a plurality of melt blown fibers formed into a tubular body
2 defining an outer surface and an inner surface, said tubular body further defining a pattern of
3 cavities.

1 8. The tubular filter product of claim 7, wherein said cavities are enclosed between melt blown
2 fibers of said outer surface and said inner surface.

1 9. The tubular filter product of claim 7, wherein said cavities comprise exposed recesses
2 extending into one of said inner and outer surfaces.

1 10. The tubular filter product of claim 7 wherein localized areas corresponding to said cavities are
2 of greater melt blown fiber density per unit volume than an average melt blown fiber density
3 per unit volume associated with the tubular filter product.

1 11. An apparatus for continuously producing a tubular filter product, the apparatus comprising:
2 a melt blowing die assembly for expelling melt blown fibers;
3 a rotating mandrel arranged to receive the melt blown fibers from the melt blowing die
4 assembly for allowing the melt blown fibers to accumulate in a tubular body thereon; and
5 a rotating roll having an outer surface with at least one detent protruding therefrom , the roll
6 arranged so that said detent comes within a predetermined distance of the mandrel for contacting
7 the tubular body of melt blown fibers in a manner forcing the melt blown fibers accumulated in
8 the tubular body on the mandrel to move in a direction parallel to the mandrel.

1 12. The apparatus of claim 11, wherein said rotating mandrel extends adjacent said melt blowing
2 die assembly to define a fiber receiving portion of said mandrel and said rotating roll is arranged
3 to contact said melt blown fibers of said tubular body at a location corresponding to said fiber
4 receiving portion.

1 13. The apparatus of claim 11 wherein the rotating roll has a plurality of detents protruding from
2 said outer surface.

1 14. The apparatus of claim 13 wherein said detents are uniformly distributed about said outer
2 surface of said roller.